TABLE-TOP NEEDS ANALYSIS

U.S. Department of Energy
Washington, D.C. 20585

FOREWORD

Table-Top methods can be used for many purposes, but the focus of this document is needs analysis. Department of Energy (DOE) Order *426.2, Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities,* stresses the importance of basing training programs on a systematic approach. An integral part of any systematically-developed training program includes determining the most cost-effective training and non-training solutions for challenges that may impact the content of training programs (e.g., new DOE Order requirements; new policies/procedures; human performance problems; management and information systems; new equipment, facility modifications, or tools; requests for training). Table-Top Needs Analysis (TTNA) is one systematic method that can be used by DOE contractor organizations to achieve a cost-effective and high quality training program.

While TTNA is not the only method of needs analysis, when conducted properly, TTNA can be cost effective, efficient, and self-validating. TTNA helps to effectively ensure that training program content creates competent employees, resolves existing and potential performance problems, and ensures that the environment in which employees work does not inhibit their ability to perform their work competently.

DOE contractors should not feel obligated to adopt all parts of this document. Instead, information from this document can be used to conduct needs analysis as the information and methods apply. Operating contractors are encouraged to use best practices selectively in developing or improving programs to meet the specific needs of their facility.
Beneficial comments (recommendations, additions, and deletions) and any pertinent data that may be of use in improving this document should be addressed in the Comments Section of this forum.

TABLE OF CONTENTS

1. SCOPE

This document guides the conduct of Table-Top Needs Analysis (TTNA). An overview of needs analysis is provided and is followed by a detailed explanation of the TTNA method. The appendixes include facilitator and coordinator materials to provide further information and examples.

Additional materials such as lesson plans, overheads, poster information, and the participant manual can be obtained separately by contacting HS-32.

2. APPLICABLE DOCUMENTS

2.1   Government Documents.

2.1.1   DOE Standards, Handbooks, Technical Standards Lists (TSLs), and Specifications.

The following DOE standards, handbooks, TSLs, and specifications form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the *DOE Standards Index* (DOESI) cited in the contracting document.

- DOE-HDBK-1078-94, *Training Program Handbook: A Systematic Approach to Training*.

- DOE-HDBK-1074-95, *Alternative Systematic Approaches to Training*.

Unless otherwise indicated, copies of DOE standards, handbooks, and TSLs are available from the Office of Scientific and Technical Information (OSTI), P.O. Box 62, Oak Ridge, Tennessee 37831.

2.1.2   Other Government Documents, Drawings, and Publications.

The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the contracting document.

- DOE Order 422.1, *Conduct of Operations.*

- Department of Energy (DOE) Order *426.2, Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities,* stresses.

- Department of the Air Force, *Information for Designers of Instructional Systems*, "Guide to Needs Assessment," AF HANDBOOK 36-2235, Volume 6, November 2002.

2.2   Non-Government Publications.

The following document(s) form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents adopted by DOE are those listed in the DOESI cited in the contracting document. Issues of documents that are not listed in the DOESI are the issues of the non-government standards cited in the contracting document.

- Rossette, Allison *Training Needs Analysis*, Educational Technology Publications, Englewood Cliffs, NJ, 1987.

- Mager, Robert and Pipe, Peter, "*Human Performance Analysis Flowchart and Worksheet,*" Mager Associates, Inc., 1979.

- Zenger-Miller, *Team Leadership*, "*Helping Your Team Reach Consensus,*" 1992.

- Haynes, Marion E., *Effective Meeting Skills*, Crisp Publications: Los Altos, California, 1988.

Non-government standards and other publications are usually available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.

3. GENERAL GUIDANCE

3.1   Why Conduct Needs Analysis?

With today's shrinking DOE budget and the emphasis and requirements placed on training programs, needs analysis is essential. The rationale for conducting this important activity is to provide an effective and efficient validation of a request either to develop training or to examine possible solutions to a performance problem. Much of today's training has been developed based on a facility's *perceived* training need rather than an *analytically determined* training need. Therefore, the training developed does not always address the training issue, yet training programs are developed at a tremendous cost to DOE. Needs Analyses can often not only limit the amount of unnecessary training developed, but also provide possible solutions to performance problems other than training.

3.2   What Is the Purpose of TTNA? What Are the Products?

The purpose for conducting needs analysis is to examine possible training and non-training solutions for problems in an existing or a new training program. When undesirable performance occurs, training is often blamed for that performance. Results of an investigation almost always reveal that training is not adequate. In response to this, training organizations immediately develop training to correct the undesirable performance, yet in many instances, after training has been developed and implemented, the undesirable performance is still present. By using needs analysis to systematically examine what people or programs are expected to do and gathering data to reveal what they are actually doing, we receive a clear picture of the real problem. When the problem is accurately defined, the analysis activity then generates a report detailing the problem, the causes, and the recommended training and non-training solutions.

3.3   Who Should Be Involved?

The people who should be involved in the TTNA process are those subject matter experts (SMEs), supervisors, job incumbents, engineers, and instructional technologists who are familiar with the specific job position and the problem in question. Depending on the job, SMEs from similar facilities might also participate.

TTNA is usually conducted to clarify a training request or review existing training programs. The most common types of requests include:

- Verify a training/qualification program with the requirements of an Order.
- Develop an initial and/or continuing training program for a job position that already exists.
- Conduct a training program evaluation.
- Resolve a specific human performance problem.

- Develop a specific training session (see Appendix B for detailed information on each type of training request).

3.4   When Is the TTNA Seminar Appropriate for Your Needs?

When you are responsible for developing or revising a job-specific training program using a systematic approach to training and no training program currently exists for the job position, or there is an existing training program for the job position, but it is not based on a valid job analysis.

The table-top process, when used properly, will prove to be a more efficient, cost-effective method for planning and conducting the needs analysis process.

3.5   What Is Needs Analysis?

Needs analysis is a systematic process of seven steps through which a request is clarified, a determination of the real problem is made, the cause(s) of the problem is/are identified, and the most effective solution (training or non-training) is determined.

3.6   What Is Table-Top Needs Analysis?

TTNA is a team approach to solving program or performance related problems which can also be used in the analysis and design of a training topic or program. While the traditional needs analysis process required several trainers (to plan the process, conduct experimental reviews, conduct surveys, interviews, and field observations), TTNA can be conducted in one setting with the right mix of personnel gathered around a table. This approach employs a seven-step process involving facility-specific individuals working together. This team should consist of 2-5 incumbents, 1-2 immediate supervisors, 1-2 other subject matter experts as appropriate, and 1-3 instructional technologists.

The team's charter is to share their expertise and experience to build a benchmarking model. The team identifies what the program or performance gaps are by comparing what should be done with what is being done. Once the team has identified these gaps, they are asked why those gaps exist. While this information is still fresh in their minds, the team also generates a list of causes for each program or performance gap. Before they move on, they list recommended solutions to bridge that gap. This process is continued until all gaps have been addressed. Techniques important to this seven-step process include: document review, brainstorming, nominal group techniques, consensus decision-making, mind-mapping, fish-boning, Pareto, and flow-charting.

4. DETAILED GUIDANCE

4.1 Overview of Needs Analysis.

Needs analysis is a process where a request for training is clarified, a determination of the **real** problem is made, the cause of the problem is identified, and the most effective solution (training or non-training) is determined. Each is briefly discussed below.

4.1.1 Basic Needs Analysis Steps.

The basic needs analysis steps are:

- Clarify the request to determine the problem.

- Develop an analysis plan.

- Collect data on expected s/actu als.

- Analyze data to determine gaps.

- Determine the cause(s) of gaps.

- Determine the solution(s) for each gap.

- Prepare and conduct briefings on the results.

4.1.2 A Request for Training Is Clarified.

The following are example requests for training:

- We need a 2-hour training session on Ladder Safety.

- We need a new training/qualification program for our Radiological Control Technicians because this new DOE Order says so.

- We need to better-train the maintenance mechanics because they aren't repairing pumps correctly.

- We need to fix our training programs because the Defense Nuclear Facility Safety Board (DNFSB), Tiger Team, or some other review group criticized our program again.

- We need a refresher course on Total Quality Management because it isn't being implemented properly by our employees.

4.1.3 A Determination of the *Real* Problem Is Made.

The following are example problems stemming from training requests shown above.

- There have recently been numerous ladder-related accidents.

- How much of the *existing* Health Physics training/qualification program meets the requirements of the new Order and what changes are required? (Rather than throwing away the existing program and starting over.)

- The maintenance mechanics are repairing the pumps correctly, they just don't do it as well as Ms. Perfect does it.

- When answering DNFSB questions, the managers did not adequately explain or show sufficient support for the training/qualification programs.

- Employees are not submitting as many productivity savings reports as management had anticipated.

4.1.4 <u>The Cause of the Problem Is Identified.</u>

There are many causes that may be encountered while conducting needs analysis. Cause types include:

- Absence of skill or knowledge.

- Absence of incentive or improper incentive.

- Absence of environmental support.

- Absence of motivation.

- Personnel problems of the individual employees (including lack of performance-based ability).

4.1.5 <u>The Most Effective Solution(s) Is Determined.</u>

The solution for a given problem can result in a training event or no training at all.

Training solutions include instructor-led training, print-based training (self-study), computer-based training, interactive videos, personal coaching (mentoring), on-the-job training, distance delivery, and desktop delivery.

Non-training solutions that enrich the work environment include improved documentation, databases, technical manuals, and job aids. Non-training solutions that adjust the organizational system include:

- Personnel selection.

- Job redesign.

- Process re-engineering.

- New tools and forms.

- Technology.
  - o Work-station design.
  - o New policies/procedures.

> - o Altered appraisal systems.
> - o Altered recognition programs (incentives, rewards).
> - o Supervisor/management development.
> - o Coaching, mentoring.
> - o Employee Assistance Programs.

4.1.6 Sources of Needs Analysis Information.

Successfully performing needs analysis means looking at a lot of different information. The sources of information include people, documentation, regulatory requirements, and perhaps work products. People sources can be subject matter experts, job incumbents, immediate supervisors and managers at various levels, trainers, customers or users, and exemplary performers. Documentary and other sources could include:

- Audit or productivity figures.
- Accident reports.
- Grievance reports.
- Program evaluation reports.
- Absentee figures.
- Budget reports.
- Internal and external lessons learned.
- Occurrence reports.
- Personnel records.
- Instructor evaluations.
- Employee test results.
- Facility inspection, evaluation, accreditation reports.
- Facility performance reports.
- Regulatory requirements.
- Work products.

4.1.7 Techniques Used to Gather Needs Analysis Information.

Several techniques (alone or in combination) can be used to obtain information from these sources. The techniques that the facilitator may use include document review, nominal group technique/consensus decision-making, mindmapping, interviews, observations, and surveys. Tools that the team may use include Mager's Human Performance Analysis Flowchart/worksheet, fishboning, and the Pareto Diagram. With the right mix of team members,

interviews, observations of personnel and their environment, and surveys/questionnaires may not be necessary to obtain the necessary information.

4.2   Table-Top Needs Analysis.

The primary tools used in a table-top needs analysis are document reviews and the table-top processes. Document reviews are conducted by individual team members who then share results with each other. Table-top processes call for a facilitator leading the team and using many different techniques. In this process, interviews are used only as a secondary tool. When the team cannot identify needed information via document review and table-top discussions or when the team decides that additional input will validate their information, then they will determine what interviews need to be conducted. They will then divide up and conduct concurrent interviews.

Using a table-top team approach has several benefits. It promotes buy-in of both the process and the results because organization personnel are part of the process. Needs analysis then becomes a process initiated by the work force. The job incumbents learn the needs analysis process and become aware of such issues as expecteds, actuals, gaps, causes, and solutions when they return to work. This has the potential of having workers identify where improvements can be made and whether non-training solutions are applicable. The needs analysis process can be conducted by the team in little time because of the team's mix of expertise. By having the team review documents and participate in a table-top discussion, most of the needs analysis information can be uncovered without using extensive interviewing, observation, or surveys that may impact facility operations and take a lot of time. The length of time for a TTNA will vary from 2-5 days, depending on the nature of the problem being examined.

4.3   The Facilitator.

Serving as a pivotal role, the facilitator is responsible for teaching the lessons and for facilitating the team members through the TTNA steps. A second facilitator also participates, and rotates between being lead-and co-facilitator, in whatever manner works best. Rotating these two equally-qualified facilitators allows a break for the "off," or documenting facilitator, and thus allows a higher energy level for the "on" facilitator. As the TTNA process takes place, the co-facilitator observes the process and decisions of the team and documents certain aspects of their work on the Briefing Form (Appendix F is an example).

Participants brief management on the last day, explaining the intent, process, and results found during their needs analysis. The facility should keep a record of the briefing and its supporting documentation so the results can be used in later processes when building training programs.

The facilitator must possess many skills to make this process a success. In the role of instructor, the facilitator needs strong instructional skills in order to teach the lessons. The facilitator also serves as a process expert who facilitates the sessions but does not provide technical input. Successful facilitation hinges on three factors: interpersonal skills, expertise in the systematic approach to training process, and the ability to perform special skills associated with facilitating table-top processes. At a minimum, the facilitator should be familiar with the needs analysis

process, the difference between needs analysis, job analysis, and task analysis, and possess excellent facilitation skills. Flexibility and the ability to adjust to changing circumstances are crucial. Preferably, the facilitator is qualified to facilitate TTNA through training and experience.

Interpersonal Skills Needed by TTNA Facilitator	
• FLEXIBILITY!!!	• a sensitivity to others
• the ability to establish and maintain enthusiasm	• the ability to motivate, encourage, and focus team members
• patience	• the ability to make decisions
• the ability to display and maintain a positive image	• excellent listening skills
• excellent memory	• a sense of humor
• a high degree of sensitivity to both verbal and nonverbal communication	• the ability to display warmth and establish rapport quickly with team members

4.4   The Coordinator.

The coordinator's role is to make the necessary needs analysis process arrangements. For example, when making preparation arrangements, the coordinator should select TTNA team members, gather job-related information for use during the process, and schedule the meeting room. When making process arrangements, the coordinator should gather any other job-specific information (e.g., gather additional documents, conduct interviews with job incumbents or with any other personnel as identified by the TTNA team members). Appendix A, TTNA Needs Analysis Survey, should be used when initially preparing for a needs analysis process. The coordinator may or may not also act as the facilitator of the TTNA process. When making post-process arrangements, the coordinator should ensure that the same TTNA team members will be available to assist in bringing the process to completion. The coordinator checklist, Appendix C, should be used when preparing for the TTNA process.

Special Skills Needed by TTNA Facilitator

- expertise in needs analysis processes
- expertise in the table-top analysis method
- skill in nominal group techniques
- skill in questioning techniques
- skill in fishbone and mindmapping
- the ability to act as a process expert who leads and controls the process but allows team members to act as content experts
- skill in small-group dynamics
- skill in obtaining small-group consensus
- the ability to establish and maintain the team's pace, balance, and individual participation

The coordinator should read this handbook so that he/she: (a) has an idea of what the TTNA process entails, (b) can discuss the significance of the TTNA process with the key managers to receive management's buy-in, and (c) can provide the facilitator with the necessary detailed information that describes the performance problem in question. Appendix E contains a planning sheet that can be used for gathering the correct information to give to the facilitator. The information provided to the facilitators about the performance problem will assist the facilitators in deciding whether the TTNA process is needed or some other process is required. Appendix D, Sample TTNA Letters, can be used for letter format throughout the TTNA process.

4.5   Preparing for the TTNA Process.

4.5.1   Identify Scope of the Needs Analysis.

The facilitator must interface with the coordinator (if not the same person) to ensure this process will meet their needs. The facilitator determines the nature of the problem to be examined during the process and the status of expecteds and actuals. This will assist in determining how long the process will take (i.e., from 2-5 days). Though this process may be useful in other circumstances, the most common reasons a facility might want this seminar are to:

- Compare a training/qualification program with requirements of an Order,
- Develop an initial and/or continuing training program for a job position that already exists,
- Conduct training program evaluation,
- Resolve a specific human performance problem, or
- Develop a specific training session.

For each of the above requests, a worksheet is provided in Appendix B to assist the facilitator in determining the full scope of the request. When interfacing with the coordinator, use the applicable Appendix B worksheet by:

- Asking the questions and clarifying the expected outcomes listed under Step 1, Clarify Request to Determine Problem,
- Asking which documents are available for review during the seminar (samples are listed under Step 2, Develop Analysis Plan), and
- Stating which of those documents should be examined PRIOR to the seminar.

Depending on the coordinator's answers, set a preliminary process date, location, and length. It is better to be pessimistic in terms of the length of the process (i.e., set it for 4 days if you think it might take 3). Once the process is scheduled, the coordinator should be given a list of which documents require review prior to the process.

4.5.2 **Study the Materials.**

Once the TTNA process is scheduled, the facilitators prepare by studying this document.

The facilitators must spend adequate time preparing to instruct the participants of the TTNA process. It is crucial that the facilitators understand and apply the techniques that may be used. To instruct and facilitate the workshop effectively, both facilitators must be intimately familiar with the entire TTNA process and not just the sections each facilitator instructs.

After teaching the lessons, the facilitators will begin conducting the actual TTNA process. Depending on what problem is being assessed, different techniques will be used. Appendix B provides examples of how each TTNA step should be conducted for a given problem. Therefore, the facilitators should study the applicable Appendix B worksheet to formulate an idea of how to go about conducting TTNA for each particular situation. The facilitators determine which techniques will be used for each step and whether the steps can effectively be combined.

4.5.3 **Review Available Information.**

> **Obtain from coordinator:**
> - Needs Analysis Worksheet
> - TTNA Planning Sheet
> - Problem-related information

Twenty to thirty days prior to the seminar, the coordinator sends planning information and information relating to the problem being assessed in the TTNA process (information requested from the coordinator when talking about the scope). The facilitators use the information in two ways. First, to become familiar with the problem and form an idea of the types of expecteds, causes, and solutions that might arise during the TTNA and second, to build problem-related examples into the training sessions.

4.5.4 **Confirm Details with Coordinator.**

Five to ten days prior to the seminar, the facilitator confirms with the coordinator responsibility for gathering and taking all supplies to the seminar. The facilitator usually brings the supplies and instructional materials. The coordinator is usually responsible for having equipment and other supplies available in the meeting room.

The TTNA process begins with a series of short introductions:

- The coordinator introduces a manager from the operating organization that needs the analysis, and

- The coordinator introduces the facilitators.

The facilitators confirm the introductions with the coordinator and prepare a very brief biography of their qualifications and experience for the coordinator's use during the introductions.

4.6 **TTNA Process Techniques.**

There are a variety of techniques that can be used while facilitating the TTNA process. Each of these techniques are acceptable to use for each of the steps of the process. The facilitator should become familiar with each of the techniques in order to apply them when necessary. The decision about which technique to use has to be made by the facilitator depending on the team cohesiveness, the desired end product, available references, etc.

4.6.1 **Nominal Group Technique/Consensus Decision-Making.**

Nominal Group Technique (NGT) consists of each team member silently generating a written list of ideas and then stating one idea at a time in a round-robin type format. A round-robin involves each person taking a turn to state one suggestion from his/her list. The facilitator will then write that idea on a flipchart. The next person states a suggestion, with the facilitator adding the idea to the list, and so on, until all persons have made one suggestion. The first person then states a second suggestion from his/her list, etc. This process continues until all team members have had an opportunity to exhaust their list.

When recording ideas during the round-robin on a flipchart page, ideas should be alternated using two different-colored markers to make it easier for the team to see each idea. Each item on the flipchart should be numbered to make it easier when the team discusses certain items to gain consensus. During the round-robin, it is important to record their ideas without judgment or discussion even though revisions may occur.

Concensus Decision-Making (CDM) consists of consolidating the results of NGT and coming to agreement on those results. Consensus is a general agreement among several people. It occurs when all team members can accept and support the decision without compromising important needs or values. In consensus decision-making, complete unanimity is not the goal--it is rarely achieved. but each individual should be able to accept the group's decision on the basis of logic and feasibility. This NGT/CDM technique can be used alone or combined with document review.

As the team is guided to consensus on what information to keep and what to delete, circle the item kept and, with the same color marker, cross through the items deleted because of the circled items. For the next item chosen to be kept, circle it with a different color marker and cross through the associated items with that same color marker. This makes it easy to see where each item was folded

Guidelines for NGT and CDM
• Apply relevant criteria.
• Add to your list.
• Help others formulate their statements.
• Present your ideas clearly and logically, but don't argue.
• Empower yourselves to make this work!

into the final choices. If there are not enough different marker colors, choose some other method to differentiate between different items. For example, draw clouds around the final choice (rather than a circle) and draw squiggly lines through the crossed out items (rather than a straight line).

To resolve any consensus deadlocks, first refer to the guidelines for effectively implementing NGT/CDM to see if the team can reach consensus. If not, ask the supervisor (prior to the seminar) who should be designated first among experts so that person can resolve any deadlock decisions. Another idea is to focus the team's discussion on areas of agreement and work individually on conflicts at a later time.

The co-facilitator may, if necessary and helpful, write the final chosen items on a separate flipchart page or each item on a separate 8-1/2" x 11" page and post them on the wall.

Note: This technique is the heart of the TTNA process and should always be used.

4.6.2   Document Review.

The intent of a document review is to uncover needed information. Participants will identify which documents to review and what to look for in each document. Document review can be used alone or combined with facilitated discussion or Nominal Group Technique. Documents can provide excellent clues to what is considered to be "expected" performance (e.g., task lists, procedures). They can help determine "actual" performance, and/or trouble spots, and what might be causes of problems (Occurrence Reports reflect this information). Objective information can be collected with a minimum of effort and interruption of work flow since the documentation already exists at the work site.

The techniques that make document reviews efficient should be explained to the team. The first step of document review is thorough preparation. This entails developing a list of documents that can assist in determining expecteds, actuals, and causes, and a list of "questions to be answered" when reviewing each document. The lists become a plan that guides your activities as an analyst.

Documents are then divided among the team members so everyone can review a document at the same time. The team members should review their documents as quickly as possible to answer the questions. The facilitator ensures that the team knows what they are looking for as they review the documents (to keep the process efficient) and that they skim the documents rather than read them. Summarize the review notes into logical and concise conclusions and share those conclusions with other team members. The team should come together and everyone should share their findings and any additional questions. It is important to have clear conclusions identified.

A discussion should be facilitated afterward (or use NGT/CDM) so all team members learn the findings from each document review. Document review may not be necessary if the correct mix of people is present.

4.6.3   Fishbone.

This technique is used to determine the causes of a problem and helps to zero in on several levels of causes. It is a three-step process that forms a diagram similar to the one that accompanies this section. This technique may be used with brainstorming to identify potential causes.

FISHBONE STRUCTURE
EXAMPLE OF STEP 3

The team should brainstorm for possible causes and ask why each cause exists. The facilitator records in a fishbone format what the team members are brainstorming and/or discussing.
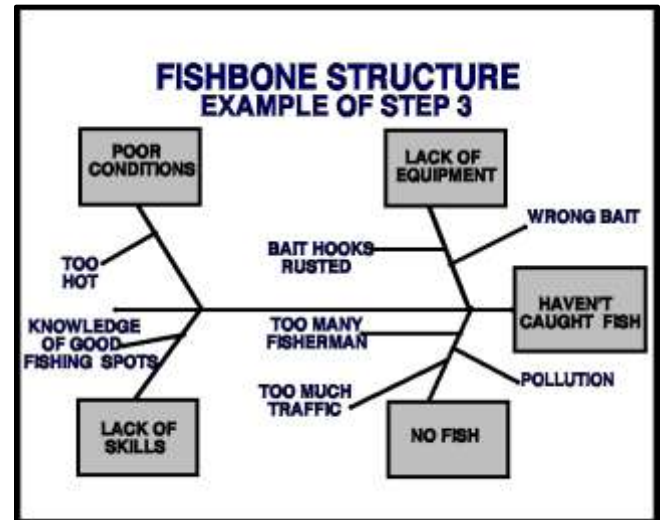
The first step is to identify the problem or "effect."
This effect is placed in a box on the right and a long arrow is drawn pointing to the box. Step two involves deciding the major categories or subdivisions of causes. These major categories are placed parallel to and some distance from the main process arrow. The boxes are then connected by arrows slanting toward the main arrow. The third step is to brainstorm for causes. These causes are written on the chart, clustered around the major category or subdivision which they influence. They are connected by arrows pointing to the main process arrow. The causes should be divided and subdivided to show, as accurately as possible, how they interact.

4.6.4   Mindmapping.

This technique is used to visually portray the problem. Brainstorming also works well with mindmapping. During mindmapping team members identify potential causes (or solutions).

The facilitator: 1) Writes the problem in the middle of a page and draws a circle around the word(s). 2) Asks "what are the causes or solutions of the problem?" 3) As ideas surface, writes the key words in the space around the circled problem. 4) Circles keys words and draws spokes from the key words to the problem, and 5) Extends other ideas out from the first level of causes (solutions). The facilitator should always write everything down. Unnecessary items can be eliminated later.

4.6.5   Pareto Diagram

If the use of NGT/CDM and document reviews results in recordable information such as the frequency of occurrences, the costs associated with an event, or production time lost due to an event, then using a Pareto diagram to chart this information can be effective. Using a Pareto diagram to chart recordable information against a number of events is a useful technique for making
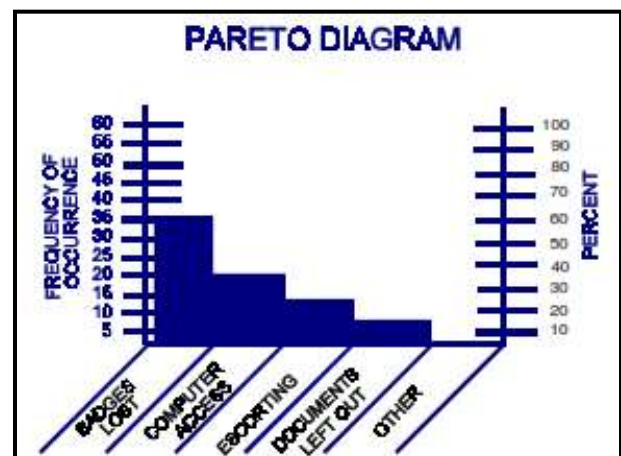
PARETO DIAGRAM

decisions and presenting the information to those requesting the needs analysis. A Pareto diagram shows the largest cause of the problem and ranks the rest. Pareto Diagrams are a visual representation used to assist the analysis process by establishing priorities and to aid in communication to show how decisions are made on facts, not just opinions. The visual representation (comparison) graphically distinguishes the significant problems or causes from the less significant.

The team groups the problems, causes, and costs into categories and makes a column graph with each column representing a category (always ordered from the highest priority on the left to the lowest on the right). The team then decides on the biggest problem and rank the rest. They then determine the most important cause and rank the rest.

4.6.6   Interviews.

Although document review and table-top discussions will be the primary tools used in this process, if using these techniques cannot uncover or resolve everything, interviewing should be used. Conducting an interview determines expected performance, actual performance, causes, and solutions. The interview can be a telephone interview, a 1 on 1 in-person interview or a 1 on 2 in-person interview.

The techniques for making the interviews efficient and effective should be explained to the team members. Team members should concurrently interview to save time. The steps for interviewing are:

Step 1: Prepare for the Interview.

Understand what you are looking for and what you expect to gain by conducting the interview -- expecteds, actuals, causes, etc. To keep the interview on track, gain needed information from each source and ensure that the time spent conducting the interview is effective. The plan should include a list of carefully prepared questions that will be asked of each source. If one of the purposes for the interview is to examine causes, the plan should include environmental items that can be noticed when going to or conducting the interview (if the interview is conducted at the work site). Examples: of environmental items include location of procedures, whether people are actively following procedures, whether job aids are available in the work environment, what attitudes are being displayed via people's conversations, interactions, etc. Choose people who can provide the most information for multiple purposes (e.g. expecteds, actuals, and causes) to reduce the number of interviews required to gain needed information. To achieve the best results, the interview should be conducted in a location that is quiet and comfortable, with no distractions. If possible, the time, length, and location of the interview should meet the needs of the interviewee in terms of any constraints the interviewee might have (working hours, other).

Step 2: Begin the Interview.

Regardless of whether the interview is being conducted in person or by telephone, start on time. The interviewee's first impression of the interview and interviewer is often a lasting

impression. Therefore, the first moments are critical to the overall success of the interview. Explain who you are, why the interview is being conducted, and the intent of the interview. Ensure that the environmental conditions are appropriate to the interview. To help the interviewee relax, start the interview by making "small-talk" and getting to know the interviewee. This will enhance the interviewee's willingness to provide needed information. Asking difficult and controversial questions at the beginning of the interview can make the interviewee apprehensive and reluctant to provide needed information.

Step 3: Conduct the interview.

Allow and encourage interviewees to do most of the talking during the main part of the interview. During this time the interviewer should guide the interview to keep it on track. Each question asked should seek information that is focused on the purpose of the interview. These questions will be your prepared questions and any follow-up questions you need for clarification. Active listening is very important during interviews. The interviewer should clearly understand what is being said and meant by the interviewee. The interviewer should not try to remember what is said during the interview. The interviewee's responses to questions should be documented.

Step 4: Conclude the interview.

The manner in which the interview is concluded will change for each interview since it depends on what happens during the interview. However, there are several items to be considered when concluding an interview. They are 1) give the interviewee time to ask questions, 2) summarize what has been said during the interview, 3) explain how the information will be used in the needs analysis process, 4) inform the interviewee that additional data may be needed at a later date and ask if it's okay for you to return for a few follow-up questions, and 5) thank the interviewee for participating in the interview.

Step 5: Decode/summarize notes.

It is important to summarize your interviewing notes into a logical and succinct conclusion and to identify new issues and additional questions.

Team discussions should be facilitated to prepare interview questions. The team should divide interview questions among team members, determining which team member will interview whom, and whether the interview would be best handled in person or over the phone. While interviews are being conducted, the facilitator should stay in the meeting room to keep it quiet for people to compile their notes. The coordinator schedules the interviews and creates a chart on the whiteboard in the working room showing who is interviewing whom, where, and at what time(s). When all team members are finished interviewing and compiling notes, a brief discussion should be facilitated for each interviewer to share the results with the rest of the team.

The co-facilitator may also unobtrusively accompany a team member to observe an interview and provide constructive feedback to the interviewer (after the interview) on the effectiveness of that person's interviewing skills.

4.7 Conducting the TTNA Process.

4.7.1 Orient the Team.

The facilitator introduces the TTNA process to the team members. The intent of introducing this process to SMEs prior to beginning the actual TTNA process is two-fold. First, it familiarizes the team members with the terms and big-picture of the TTNA process. Second, it covers some team-dynamic ground rules that will make the process more effective and efficient. The orientation should be performed prior to conducting the actual TTNA.

4.7.2 Step 1: Clarify Request to Determine Problem.

This step discovers the team members' perception of the problem/request. The facilitator leads the team to consensus on the problem, determining if the problem is worth resolving, and identifying expected outcomes resulting from the TTNA process. The facilitator leads the group to consensus using one or more of the "optional" methods by asking questions such as:

- Explain the problem being resolved in this analysis.

- What does the team see as the problem?

- How many people are impacted by this problem? How many people contribute to this problem?

- Who wants this problem solved or this new technology introduced? Why?

- What are the expected outcomes of this analysis? What questions do we want to have answered?

- How will we know (what indicators will tell us) that the problem has been resolved?

- - Who must we keep abreast of our findings? Who else might want to know?

- Who must NOT know, at least at first?

The facilitator also ensures that the problem statement is clear and focused. Questions should be used to determine if the problem is worth being resolved. The facilitator should write the problem statement and expected outcomes on a piece of 8-1/2" x 11" paper and post it in a location easily visible to all team members. Expected outcomes should then be listed on a flipchart page.

The co-facilitator will type the problem statement into the Briefing Form (refer to Appendix F to see a blank Briefing Form and an example of a completed Briefing Form).

4.7.3 Step 2: Develop an Analysis Plan.

This step is conducted as an organizational step so that the TTNA process will flow smoothly and be as effective as possible. During this step, TTNA team members determine what

information must be collected (expected, actuals, gaps, causes, solutions). For each information type, they will list the sources of that information (which people, documents, and work products). To conduct this step the facilitator asks questions such as:

- Is there anyone in addition to the team members who would be an effective source of information for this analysis? Will they be accessible? Will we be able to go back to them again and again as we need additional information?

- What records might provide useful information? Will they be accessible? Will we be able to go back to them again and again as we need additional information?

The facilitator could create a chart similar to those identified in Appendix B depending on the different TTNA requests.

When the chart is complete, the facilitator asks questions such as "will this information help us find answers to our original problem and expected outcomes?"

Types of Information	Specific Sources of Information	Analysis Techniques
Expecteds		
Actuals		
Gaps		
Causes		
Solutions		

The coordinator should gather any documents not gathered previous to the process. The coordinator then contacts any individuals that the TTNA team may want to interview and schedules approximate interview times.

4.7.4 <u>Step 3: Collect Necessary Data.</u>

In this step the facilitator ensures that everyone has a clear idea of what expecteds are and what actuals are. This step is often done in conjunction with Step 4, Analyzing Data to Determine Gaps (i.e., the end-product of discussing expecteds and actuals is a list of gaps). The TTNA team members participate in processes to determine and/or discuss what expecteds and actuals are. In most cases the participants will already know (mentally) what the expecteds and actuals are, so there is no need to make a list of expecteds and a list of actuals; rather, they can simply discuss what the gaps are between expecteds and actuals. At other times, the expecteds may already be listed in a document, so participants need merely talk about their knowledge of actuals as compared to the listed expecteds in order to create a list of gaps. In rare cases, if the TTNA team members are not all completely familiar with the problem being examined, they may need to discuss and list "the expecteds" and "the actuals." All of the various process techniques can be used to conduct this step.

The facilitator then determines whether the team needs to spend time listing expecteds and actuals on separate flipcharts or whether they can just discuss them to create a list of gaps. If necessary, create a list of expecteds on one flipchart page (using a single colored marker) and a list of actuals on another flipchart page (using a different colored marker). The facilitator assigns interview responsibilities if applicable.

4.7.5   Step 4: Analyze Data to Determine Gaps.

All the data that was gathered in the previous steps is analyzed to determine what the gaps really are. This step is often done in conjunction with Step 3, as described above.

Team members participate in processes to list the gaps and, if helpful, group common gaps. This is commonly done using the process techniques used in Step 3.

The facilitator should list each gap on a separate sheet of 8-1/2" x 11" paper (using another color marker) and ensure the team is listing gaps and not causes or solutions. All gaps identified should be relevant to the problem. If helpful, input may be provided by the facilitator to the team into grouping common gaps.

The co-facilitator should input the list of gaps in the Briefing Form.

The coordinator should inform the customer of findings so there are no surprises to the customer during the briefing.

4.7.6   Step 5: Determine Cause(s) of Gaps.

This is done to determine what prevents the expected performance/results from being achieved.

The TTNA team members will participate in the appropriate process techniques to determine cause(s) of each gap.

The facilitator should list the causes (using one color marker) for each gap on a yellow Post-it note and place them below the gap. The facilitator should ensure that the team lists causes and not solutions. The causes should reflect back on the gap and the original problem. The facilitator should assign interview responsibilities if applicable.

The co-facilitator should input the list of causes associated with each gap in the Briefing Form.

4.7.7   Step 6: Determine Solution(s) for Each Gap.

This step examines the gaps and causes to decide the most appropriate way to eliminate the gap to achieve the expected performance/results.

TTNA team members should participate in the applicable process techniques to determine the most appropriate training and/or non-training solution(s) based on the causes for each gap.

The facilitator should list the solutions (using one color marker) for each gap on a self-adhesive note and place it below the gap next to the applicable cause(s). The solutions should reflect back on the gap and the original problem.

The co-facilitator inputs the list of solutions associated with each gap in the Briefing Form and should provide a copy of the Briefing for each participant to review during Step 7.

4.7.8   Step 7: Prepare and Conduct a Briefing of the Results.

This step reports the suggested solution(s) for resolving the identified problem to management.

The TTNA team members determine who to invite to the briefing. They will review the briefing prepared by the co-facilitator using the checklist provided in Appendix F and determine what changes are necessary to the briefing content. The facilitator will determine the content of any instructional aids that may be used. The team will select a team member to be the presenter. The team will then prepare the room for the briefing. One team member will present the briefing while the others attend and answer any questions. The facilitator should also lead a group discussion to review/revise the briefing.

The facilitator should ensure that the team reaches consensus on the briefing content and that the briefing content focuses on the original problem. The co-facilitator should make all necessary changes to the briefing. There should be enough copies printed for everyone involved in the briefing. The facilitator and co-facilitator should attend the briefing but should not participate unless questions are asked of the TTNA process that the team members cannot answer.

The coordinator should schedule the briefing (people, time, location), create any instructional aids in time for the briefing, and attend the briefing.

4.7.9   Summary.

During the summary the facilitator should explain to the team members how the TTNA results will be used at their facility and in subsequent TTNA processes. All team members should be thanked for their contributions.